

# Machine Learning-Based Web Application Documentation

## 1. Introduction 🚀

### 1.1 Overview

Welcome to our machine learning-powered web application, designed to supercharge your data analysis and data science projects. Our mission is to simplify complex data science tasks and empower users to explore, analyze, and model their data effortlessly. 💡

### 1.2 Objectives and Goals

Our primary objectives are to eliminate coding hassles and help users:

- Automate redundant data science tasks. 🤖
- Effortlessly analyze and visualize data. 📊 📈
- Simplify data preprocessing. ✂️
- Train machine learning models without coding. 🤖 📄
- Save and interpret their models with ease. 💾

## 2. Accessing the Application 🌐

### 2.1 Web-App Link

You can access our application through the following link: [Web-App Link](#). 🔖

### 2.2 YouTube Tutorial

For a detailed step-by-step guide, check out our YouTube tutorial: [YouTube Tutorial](#). 🎥


### 2.3 Guest Access

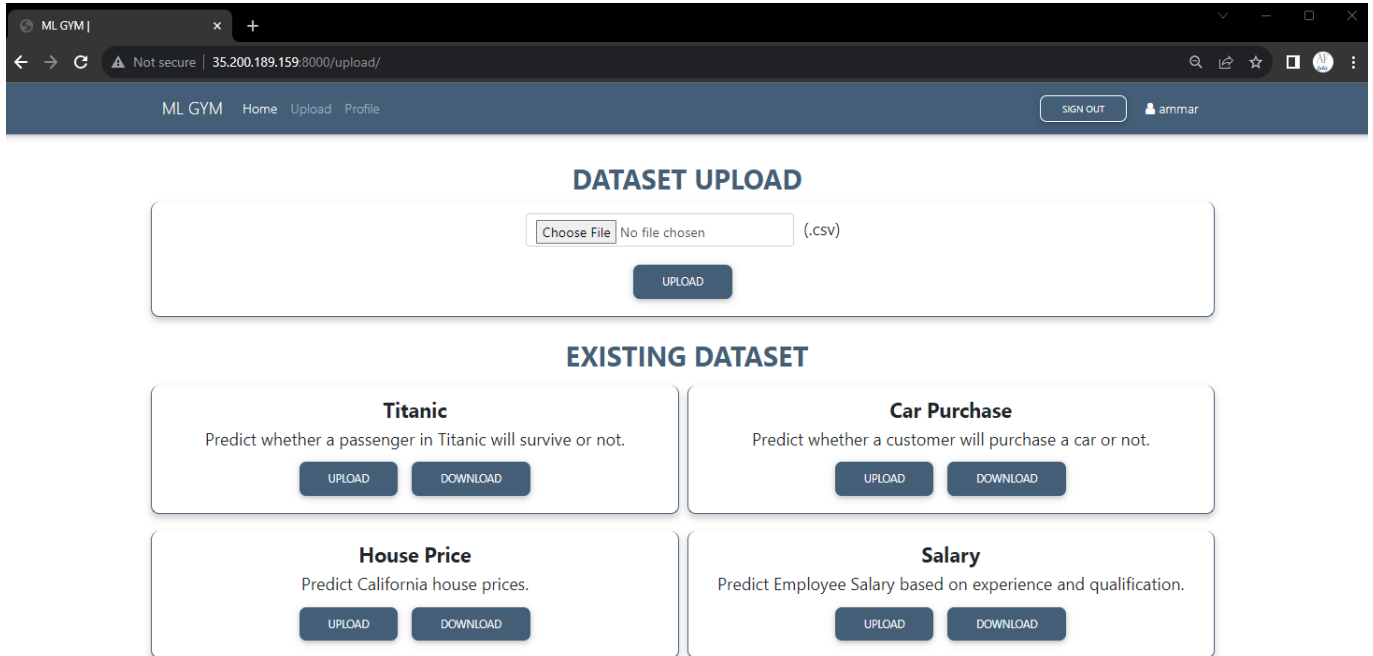
We offer a seamless experience where you can continue as a guest without the need for account creation. 🙌

## 3. Application Workflow

### 3.1 Data Upload

To embark on your data analysis journey:




- **Upload Your Data:** Simply upload your dataset in CSV format. It's quick and easy! 

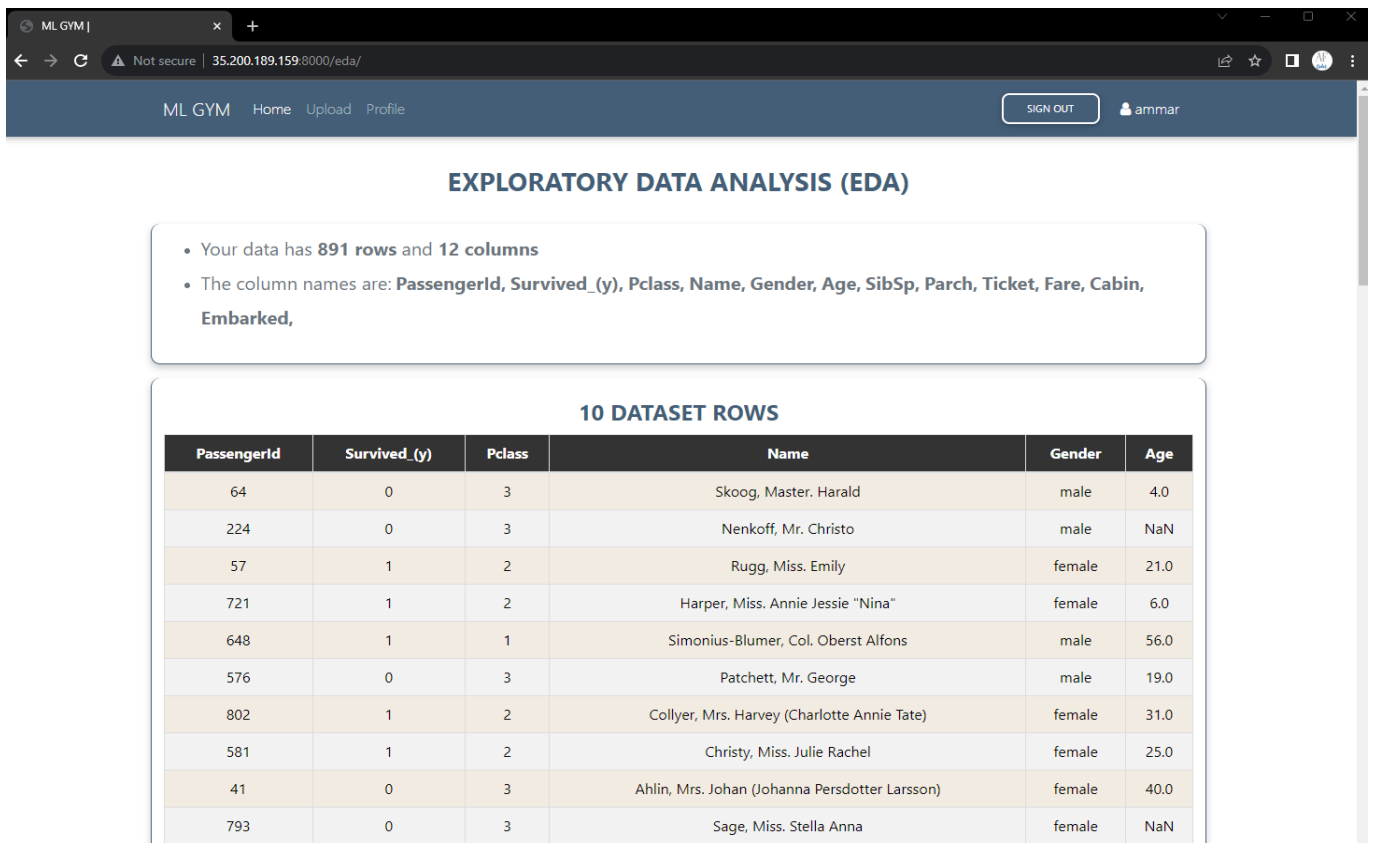


The screenshot shows the 'DATASET UPLOAD' section of the ML GYM application. It features a file upload area with a 'Choose File' button and a text input showing 'No file chosen'. Below this is an 'UPLOAD' button. The 'EXISTING DATASET' section displays four dataset cards: 'Titanic' (Predict whether a passenger in Titanic will survive or not.), 'Car Purchase' (Predict whether a customer will purchase a car or not.), 'House Price' (Predict California house prices.), and 'Salary' (Predict Employee Salary based on experience and qualification.). Each card has 'UPLOAD' and 'DOWNLOAD' buttons.

### 3.2 Explore Your Data

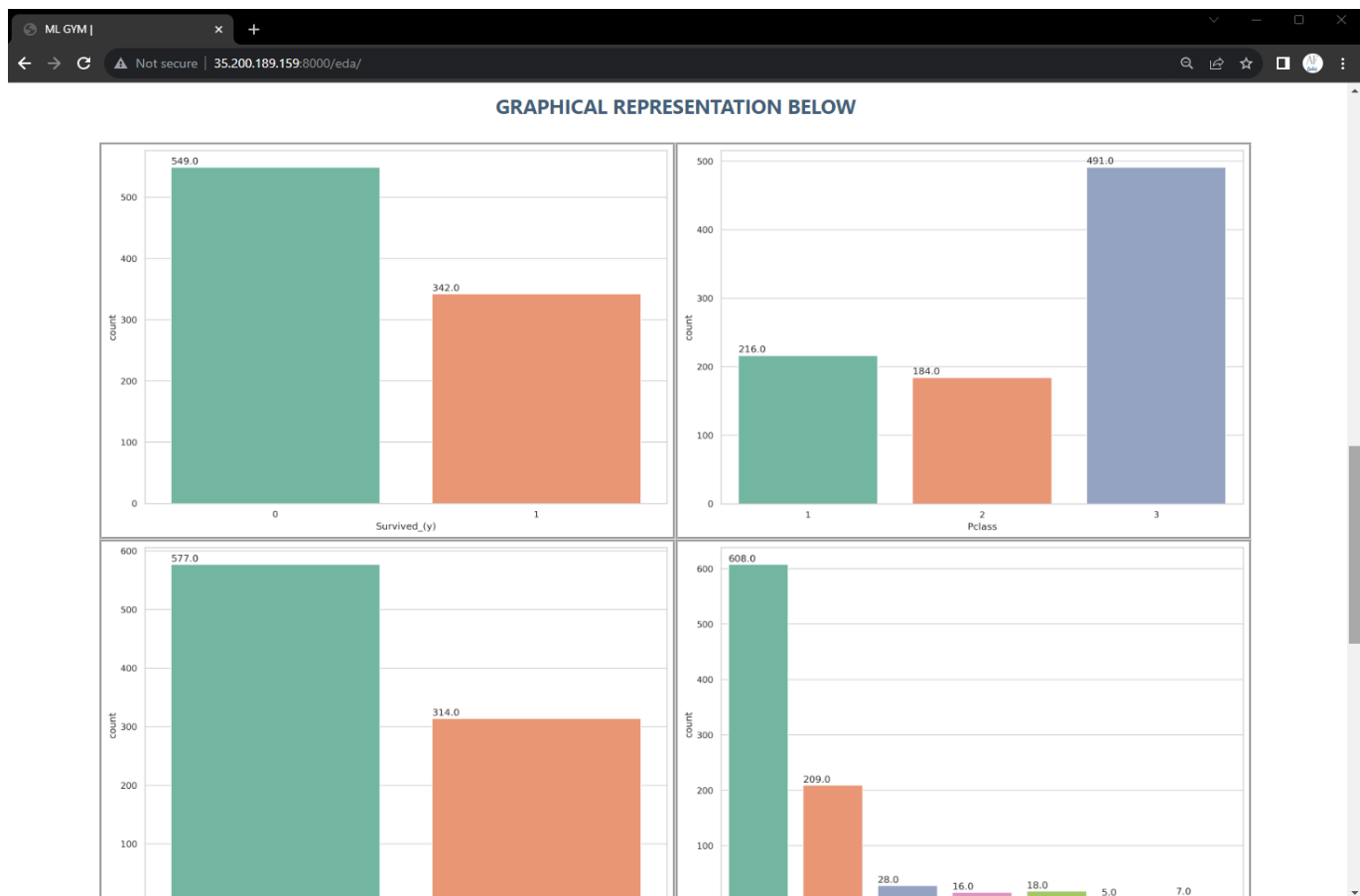
Our application swiftly analyzes your dataset and provides:

- **Insightful Visualizations:** Explore your data with ease through textual, tabular, and graphical visualizations.   





The screenshot shows the 'EXPLORATORY DATA ANALYSIS (EDA)' section of the ML GYM application. It displays a summary of the dataset: 891 rows and 12 columns. The column names are: PassengerId, Survived\_(y), Pclass, Name, Gender, Age, SibSp, Parch, Ticket, Fare, Cabin, Embarked. Below this is a table titled '10 DATASET ROWS' showing the first 10 rows of the dataset.

PassengerId	Survived_(y)	Pclass	Name	Gender	Age
64	0	3	Skoog, Master. Harald	male	4.0
224	0	3	Nenkoff, Mr. Christo	male	NaN
57	1	2	Rugg, Miss. Emily	female	21.0
721	1	2	Harper, Miss. Annie Jessie "Nina"	female	6.0
648	1	1	Simonius-Blumer, Col. Oberst Alfons	male	56.0
576	0	3	Patchett, Mr. George	male	19.0
802	1	2	Collyer, Mrs. Harvey (Charlotte Annie Tate)	female	31.0
581	1	2	Christy, Miss. Julie Rachel	female	25.0
41	0	3	Ahlin, Mrs. Johan (Johanna Persdotter Larsson)	female	40.0
793	0	3	Sage, Miss. Stella Anna	female	NaN



### 3.3 Effortless Data Preprocessing

Say goodbye to tedious data cleaning and preprocessing tasks. Our application simplifies this process:

- **Handle Missing Values:** Use radio buttons to handle missing data effortlessly. 
- **Train-Test Split:** Set your train-test split ratio with an intuitive slider. 
- **Select Dependent Variable:** Easily choose the dependent variable from a dropdown menu.

ML GYM | x +

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ML GYM Home Upload Profile SIGN OUT ammar


DATA PRE-PROCESSING

• Select the column you want to predict : Survived (y)

• Select the columns you want to drop:

☒ PassengerId ☐ Survived (y) ☐ Pclass ☒ Name ☐ Gender ☐ Age ☐ SibSp ☒ Parch ☒ Ticket ☐ Fare


☒ Cabin ☒ Embarked

• Handle NULL values in dataset 

Cabin (687 Rows)	<input checked="" type="radio"/> bfill	<input type="radio"/> ffill	<input type="radio"/> 0	<input type="radio"/> delete records
Embarked (2 Rows)	<input type="radio"/> bfill	<input checked="" type="radio"/> ffill	<input type="radio"/> 0	<input type="radio"/> delete records
Age (177 Rows)	<input type="radio"/> mean	<input type="radio"/> median	<input type="radio"/> bfill	<input checked="" type="radio"/> ffill
			<input type="radio"/> 0	<input type="radio"/> delete records

80 %

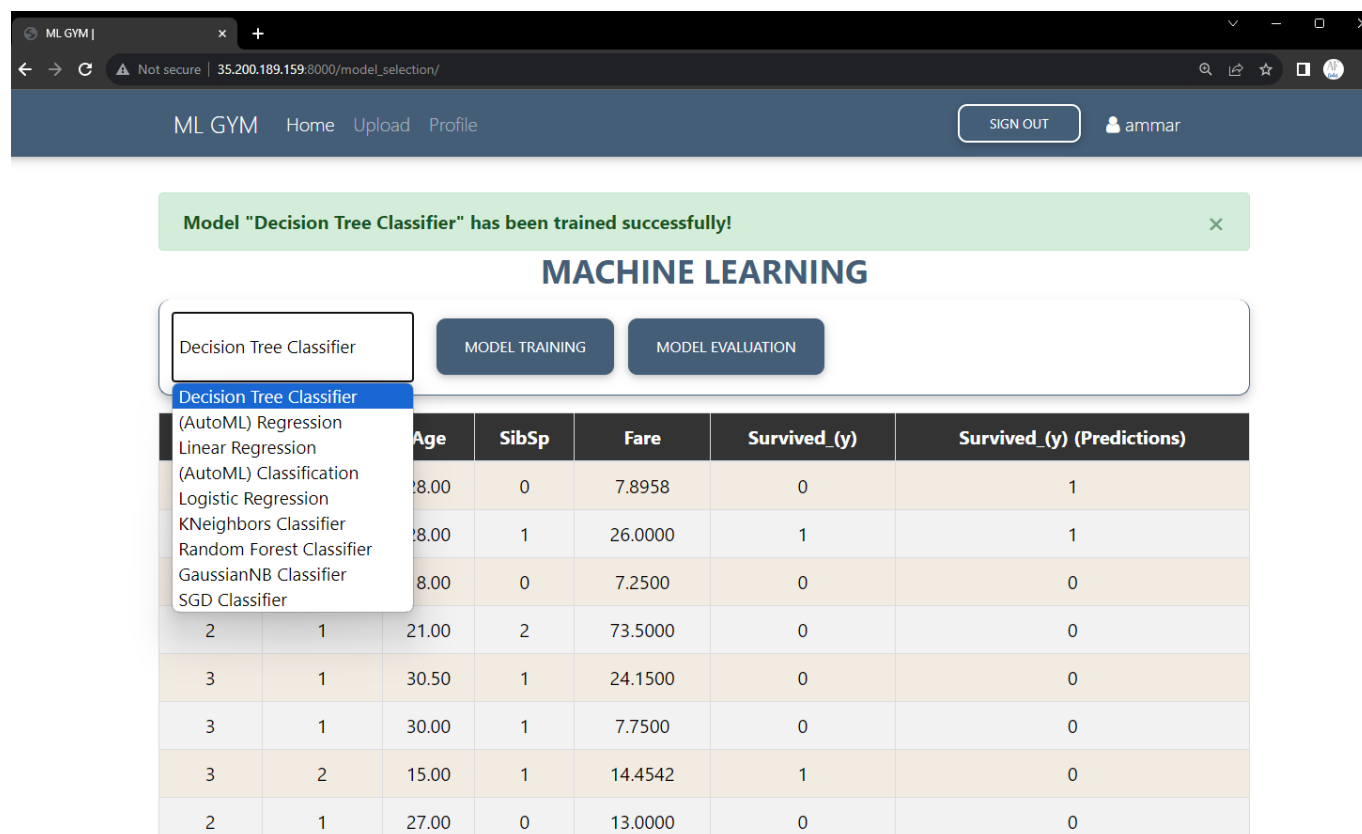
• Train and Test split ratio:



### 3.4 Train Your Model 🤖

With just a few clicks, you can create your machine learning models using various algorithms:

- **No Coding Required:** Select a model from the dropdown menu containing several ML Algorithms and click to train. 📁 📂



Model "Decision Tree Classifier" has been trained successfully!

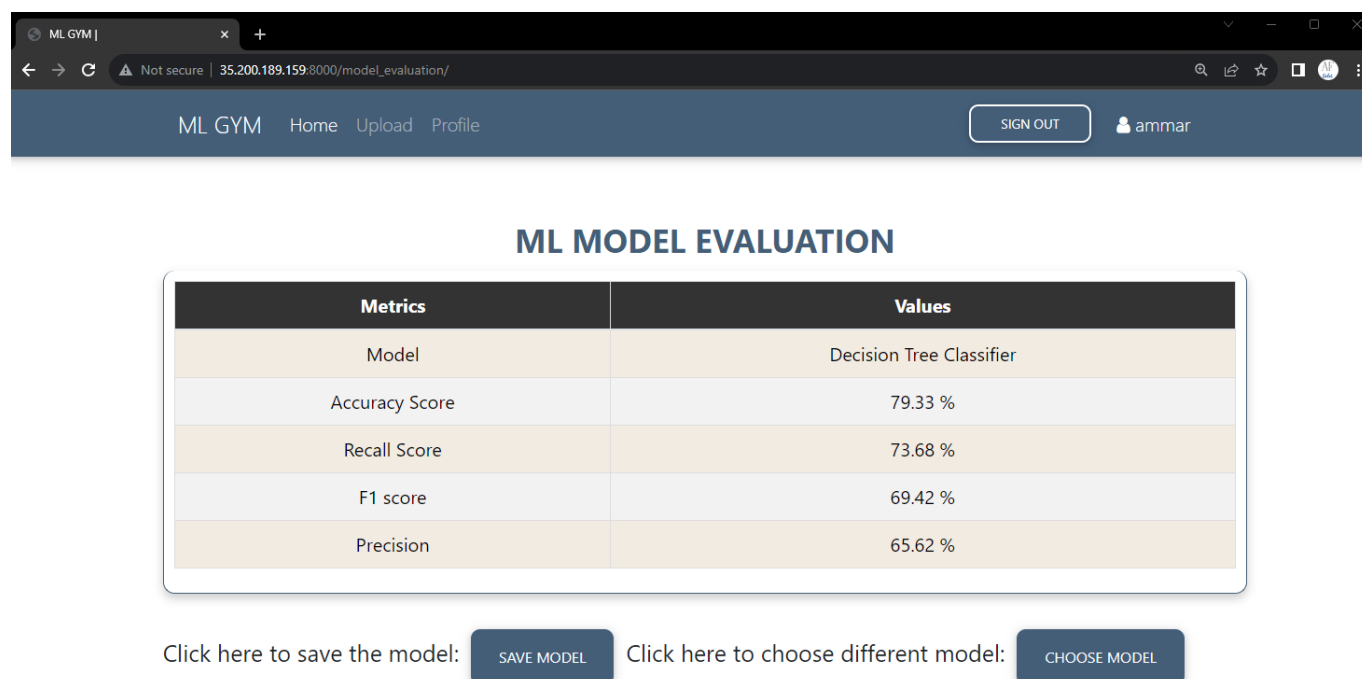
### MACHINE LEARNING

Decision Tree Classifier

MODEL TRAINING MODEL EVALUATION

		Age	SibSp	Fare	Survived_(y)	Survived_(y) (Predictions)
		18.00	0	7.8958	0	1
		18.00	1	26.0000	1	1
		18.00	0	7.2500	0	0
2	1	21.00	2	73.5000	0	0
3	1	30.50	1	24.1500	0	0
3	1	30.00	1	7.7500	0	0
3	2	15.00	1	14.4542	1	0
2	1	27.00	0	13.0000	0	0

- **Model Evaluation:** See immediate model evaluation to assess its performance. 📈 📊



### ML MODEL EVALUATION

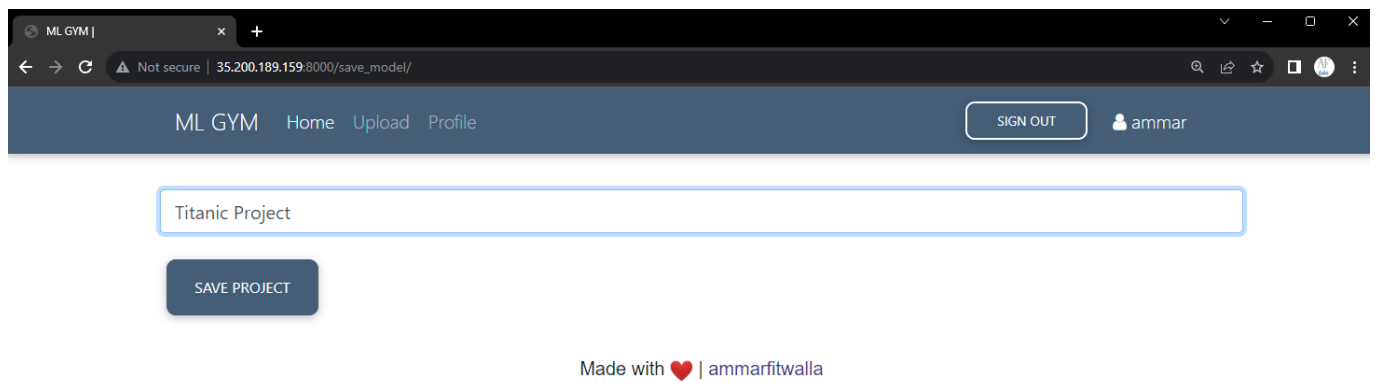
Metrics	Values
Model	Decision Tree Classifier
Accuracy Score	79.33 %
Recall Score	73.68 %
F1 score	69.42 %
Precision	65.62 %



Click here to save the model: [SAVE MODEL](#) Click here to choose different model: [CHOOSE MODEL](#)

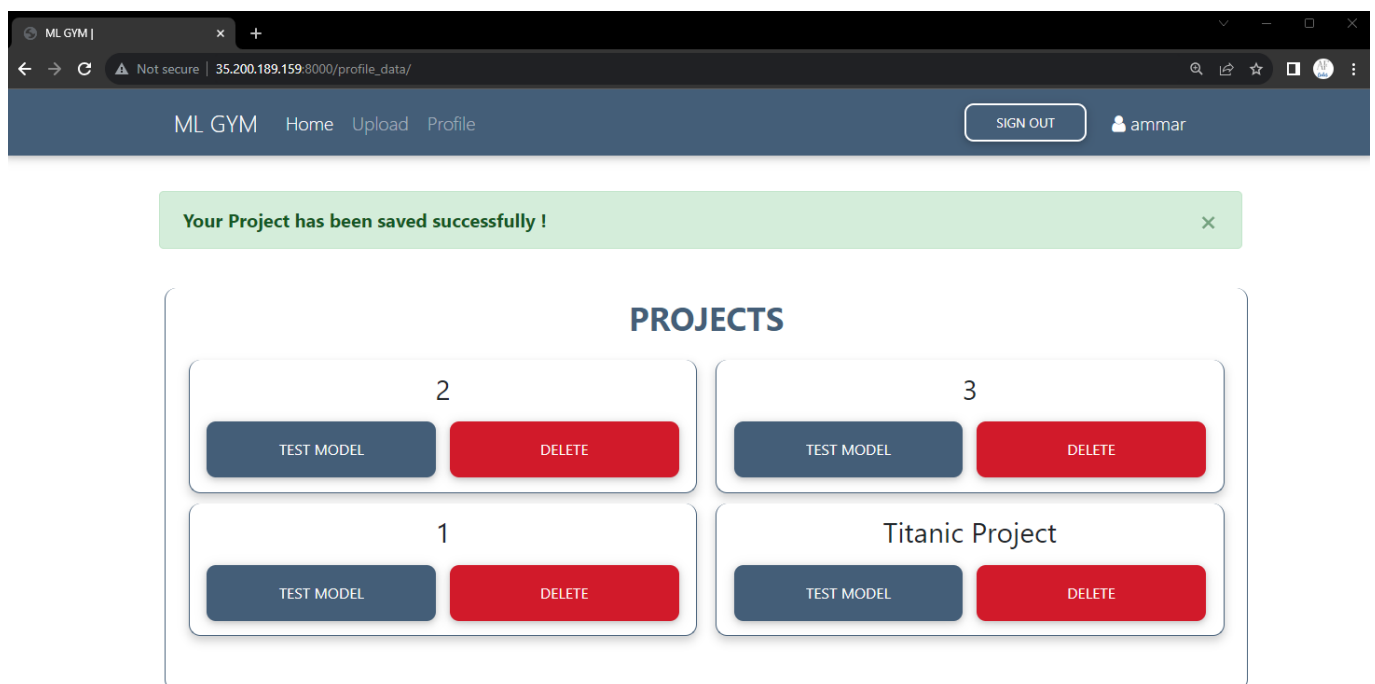
## 3.5 Save Your Model

Once you've perfected your model:

- **Effortless Saving:** Save it for future use and interpretation.





- **Model Testing:** Access your saved models in your profile for testing on custom inputs.  



### 3.6 Interpret Your Results

Gain valuable insights into your model's predictions and understand how it makes decisions:

- **In-App Analysis:** Dive into your results and interpret them right within the application.  

ML GYM |

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### Titanic Project

Pclass

1

Gender

male

Age

56

SibSp

12

Fare

220

PREDICT

Target Variable	Prediction
Survived_(y)	1